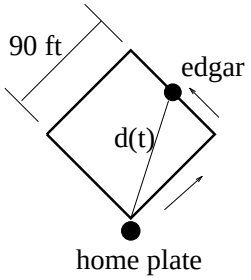
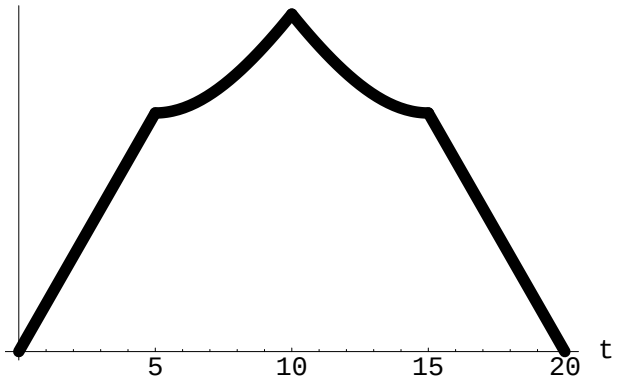
Worksheet #6
The Baseball Runner
Math 124

A baseball diamond is a square with sides of length 90 feet. Assume Edgar hits a home run and moves around the bases (counterclockwise) 18 ft/sec. Also assume Edgar does not slow down as he perfectly turns each corner. Express the distance between Edgar and home plate as a function $d(t)$; t represents time in seconds. (Note: The function $d(t)$ is NOT the distance Edgar has traveled after t seconds.)



1. The graph of $d(t)$ is pictured below. What is the multipart rule?



$d(t) =$

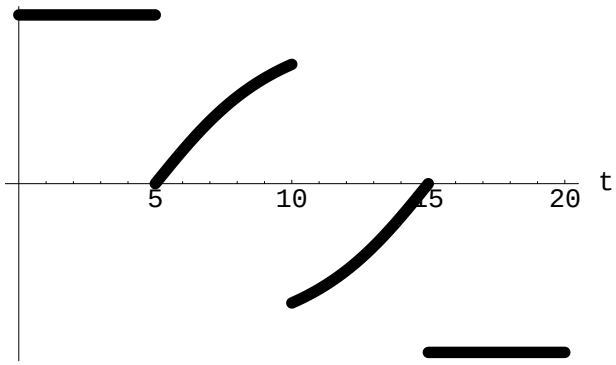
2. Is $d(t)$ a continuous function on the domain $0 \leq t \leq 20$? Calculate

$\lim_{t->5} d(t) =$

$\lim_{t->10} d(t) =$

$\lim_{t->15} d(t) =$

3. The graph of $d'(t)$ is pictured below. What is the multipart rule?



$d'(t) =$

4. Determine the total amount of time the rate of change of Edgars distance from home plate is at least 10 ft/sec.

5. Is $d'(t)$ a continuous function on the domain $0 \leq t \leq 20$? Calculate

$\lim_{t->5^+} d'(t) =$ $\lim_{t->5^-} d'(t) =$

$\lim_{t->10^+} d'(t) =$ $\lim_{t->10^-} d'(t) =$

$\lim_{t->15^+} d'(t) =$ $\lim_{t->15^-} d'(t) =$

6. Explain how the graphs of both $d(t)$ and $d'(t)$ would change if we eliminated the assumption that "Edgar does not slow down as he perfectly turns around each corner".